

PUBLIC HEALTH FACT SHEET

Eastern Equine Encephalitis

Massachusetts Department of Public Health (MDPH), 305 South Street, Jamaica Plain, MA 02130

What is Eastern Equine Encephalitis?

Eastern Equine Encephalitis (EEE) is a rare but serious disease caused by a virus. The virus infects birds that live in freshwater swamps and is spread from bird to bird by infected mosquitoes. If a mosquito infected with the virus bites a horse or human, the animal or person can become sick. The risk of getting EEE is highest from late July through September.

What are the symptoms of EEE?

The first symptoms of EEE are high fever (103° to 106°F), stiff neck, headache, and lack of energy. These symptoms show up three to ten days after someone is bitten by an infected mosquito. Inflammation and swelling of the brain, called encephalitis, is the most dangerous symptom. The disease gets worse quickly and some patients may go into a coma within a week.

What is the treatment for EEE?

There is no cure for EEE, and three of every ten people who get the disease die from it. All doctors can do is lower the fever and ease the pressure on the brain. Some people who survive this disease will be permanently disabled. Few people recover completely.

How is EEE spread?

The virus that causes EEE is spread only by mosquitoes. People and horses with EEE do not spread the disease.

How common is EEE in Massachusetts?

EEE is very rare. Since it was first described in 1938, through 2004, only 79 cases have been reported in Massachusetts. Fifty of the cases occurred during outbreaks in 1938-39 and 1955-56. Over half of the cases have been from Plymouth or Norfolk counties in southeastern Massachusetts. Rare cases have occurred outside of eastern Massachusetts.

What can you do to protect yourself?

There is an EEE vaccine for horses, but not for people. The best way to protect yourself is to keep mosquitoes from biting you. Follow these steps every summer to reduce your risk of being bitten by mosquitoes, particularly if you live near natural wetlands.

- If you must be outdoors at dusk or dawn, when mosquitoes that carry EEE are most active, wear a long-sleeved shirt and long pants. Take special care to cover up the arms and legs of children playing outdoors.
- Use repellents containing DEET (N,N-diethyl-m-toluamide) and choose a product that will provide sufficient protection for the amount of time spent outdoors. Product labels often indicate the length of time that someone can expect protection from a product. DEET is considered safe when used according to the manufacturer's directions. Products containing DEET should not be used on children less than 2 months of age and should be used in concentrations of 30% or lower for older children and adults. Mosquito netting may be used to cover infant carriers or to protect other areas for children less than 2 months of age. The following precautions should be observed when using DEET products:
 - ⇒ Avoid using DEET products that combine the repellent with a sunscreen. Sunscreens may need to be reapplied too often, resulting in an over application of DEET.

- ⇒ Apply DEET on exposed skin, using only as much as needed.
- ⇒ Do not use DEET on the hands of young children and avoid applying repellent to areas around the eyes and mouth.
- ⇒ Do not use DEET over cuts, wounds or irritated skin.
- ⇒ Wash treated skin with soap and water after returning indoors and wash treated clothing.
- ⇒ Avoid spraying DEET products in enclosed areas.
- Repair any holes in your screens and make sure they are tightly attached to all your doors and windows.

What can you do to reduce the number of mosquitoes around your home and neighborhood?

To reduce mosquito populations around your home and neighborhood, get rid of any standing water that is available for mosquito breeding. Mosquitoes will begin to breed in any puddle or standing water that lasts for more than four days. Here are some simple steps you can take:

- Dispose of or regularly empty any metal cans, plastic containers, ceramic pots, and other water holding containers (including trash cans) on your property.
- Pay special attention to discarded tires that may have collected on your property. Stagnant water in tires is a common place for mosquitoes to breed.
- Drill holes in the bottom of recycling containers that are left outdoors, so that water can drain out.
- Clean clogged roof gutters; remove leaves and debris that may prevent drainage of rainwater.
- Turn over plastic wading pools and wheelbarrows when not in use.
- Do not allow water to stagnate in birdbaths; aerate ornamental ponds or stock them with fish.
- Keep swimming pools clean and properly chlorinated; remove standing water from pool covers.
- Use landscaping to eliminate standing water that collects on your property.

What does the state do to protect people from EEE?

Massachusetts developed a Surveillance and Response Plan that coordinates efforts of local officials and state agencies to reduce the risk of EEE. The plan involves checking for the virus in mosquitoes, reducing the number of mosquitoes in the environment, and educating people on ways to avoid mosquito bites. Every year from May until the first hard frost, the MDPH and local mosquito control projects collect mosquitoes from various locations around the state and send them to the State Laboratory for testing. If the virus that causes EEE is found in mosquitoes, MDPH will tell local boards of health and mosquito control projects and ask them to increase their education and mosquito control activities. MDPH provides educational materials for physicians, veterinarians, local public health officials, and the public along with updates on EEE activity in mosquitoes, horses and humans online.

For more information:

- **For general questions about EEE:** MDPH, Division of Epidemiology and Immunization at 617-983-6800 or toll free at 1-888-658-2850 or online at www.mass.gov/dph/wnv/wnv1.htm. You may also contact your local board of health (listed in the telephone directory under “government”)
- **For questions about health effects of pesticides:** MDPH, Center for Environmental Health at (617) 624-5757
- **For general information about mosquito control:** visit the following webpage www.mass.gov/agr/mosquito/index.htm or contact the State Reclamation and Mosquito Control Board within the Massachusetts Department of Agricultural Resources at (617) 626-1777.
- **For questions about mosquito control in your city or town:** Contact your local board of health (listed in the telephone directory under “government”)

PUBLIC HEALTH FACT SHEET

West Nile Virus

Massachusetts Department of Public Health, 305 South Street, Jamaica Plain, MA 02130

What is West Nile Virus (WNV)?

West Nile virus (WNV) can cause illness varying from a mild fever to more serious disease like encephalitis or meningitis. WNV grows in birds and is spread from bird to bird by infected mosquitoes. If mosquitoes infected with the virus bite horses or humans, the animal or person can become sick. In the United States, WNV was first identified in New York during the summer of 1999. Since then, it has spread throughout most of the continental United States. It is not known how WNV got to the U.S., but it has occurred naturally in Europe, Africa and Asia for many years.

What are the symptoms of WNV?

Most WNV infections do not cause any symptoms. Mild WNV infections can cause fever, headache and body aches, often with a skin rash and swollen lymph glands. In a small percentage of people infected by the virus, the disease can be serious, even fatal. More severe infections can cause headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, paralysis and, sometimes, death. Persons older than 50 years of age have a higher risk of developing severe illness.

Is there any treatment for WNV?

There is no specific treatment for WNV infection. People with mild WNV infections usually recover on their own. Doctors can provide supportive therapy for people who have more serious complications, such as encephalitis or meningitis. However, approximately 10% of people with severe WNV infections die.

How is WNV spread?

WNV usually is spread by adult mosquitoes that are infected with the virus. Mosquitoes spread the virus by biting humans, horses, and other animals. WNV can sometimes be spread in other ways. For example, WNV can be spread to humans through blood transfusions and organ transplants from infected donors. Also, it is possible that pregnant women or breastfeeding mothers who become infected with WNV may pass the virus to their baby. Because of the unknown risk at this time and the fact that breastfeeding has well-established benefits, it is not recommended to discontinue breastfeeding. Horses that have WNV infection cannot spread the disease directly to humans. There is no evidence that a person can get WNV from touching live or dead infected birds. Still, basic safety precautions should be used when handling any dead animals, including a dead bird. If you need to move or dispose of a dead bird, use gloves or a shovel to handle it, and place it into two plastic bags (one inside the other).

How common is WNV in Massachusetts?

Serious illness caused by WNV is uncommon and has been identified in a small number of people in Massachusetts for the past several years. Additionally, WNV has been found in horses, mosquitoes and many species of birds throughout the state. The mosquitoes that carry this virus are common throughout the state, and these mosquitoes are found in the city as well as in the woods and other less populated places.

What can you do to protect yourself?

There is no human vaccine for WNV. The best way to protect yourself is to keep mosquitoes from biting you. The risk of getting WNV is highest from late July through September. Follow these steps every summer and fall if you live in or visit an area with mosquitoes:

- Avoid outdoor activities between dusk and dawn, if possible, as this is the time of greatest mosquito activity.
- If you must be outdoors when mosquitoes are active, wear a long-sleeved shirt and long pants. Take special care to cover up the arms and legs of children playing outdoors.

- Use repellents containing DEET (N,N-diethyl-m-toluamide) and choose a product that will provide sufficient protection for the amount of time spent outdoors. Product labels often indicate the length of time that someone can expect protection from a product. DEET is considered safe when used according to the manufacturer's directions. Products containing DEET should not be used on children less than 2 months of age and should be used in concentrations of 30% or lower for older children and adults. Mosquito netting may be used to cover infant carriers or to protect other areas for children less than 2 months of age. The following precautions should be observed when using DEET products:
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 - ⇒ Avoid spraying DEET products in enclosed areas.
- Fix any holes in your screens and make sure they are tightly attached to all your doors and windows.

What can you do to reduce the number of mosquitoes around your home and neighborhood?

To reduce mosquito populations around your home and neighborhood, get rid of any standing water that is available for mosquito breeding. Mosquitoes will begin to breed in any puddle or standing water that lasts for more than four days. Here are some simple steps you can take:

- Dispose of or regularly empty any metal cans, plastic containers, ceramic pots, and other water holding containers (including trash cans) on your property.
- Pay special attention to discarded tires that may have collected on your property. Stagnant water in tires is a common place for mosquitoes to breed.
- Drill holes in the bottom of recycling containers that are left outdoors, so that water can drain out.
- Clean clogged roof gutters; remove leaves and debris that may prevent drainage of rainwater.
- Turn over plastic wading pools and wheelbarrows when not in use.
- Do not allow water to stagnate in birdbaths; aerate ornamental ponds or stock them with fish.
- Keep swimming pools clean and properly chlorinated; remove standing water from pool covers.
- Use landscaping to eliminate standing water that collects on your property.

What is Massachusetts doing to protect people from WNV?

Massachusetts has a Surveillance and Response Plan that serves to coordinate efforts of local officials and state agencies to reduce the risk of human WNV. The plan involves checking for the virus in mosquitoes and birds, reducing the number of mosquitoes in the environment, and educating people on ways to avoid mosquito bites. Every year from May until the first hard frost, the Massachusetts Department of Public Health (MDPH) and local mosquito control districts collect mosquitoes from various locations around the state and send them to the State Laboratory for testing. MDPH collects information on the number and locations of dead birds reported in the state and tests selected birds for WNV. If WNV is identified in birds or mosquitoes, MDPH will tell local boards of health and mosquito control districts and ask them to increase their education and mosquito control activities. MDPH provides educational materials for physicians, veterinarians, local public health officials, and the public along with updates on WNV activity in mosquitoes, birds, horses and humans online.

For more information:

- **To report a dead bird(s):** MDPH Public Information Line toll free at 1-866-MASS-WNV (627-7968)
- **For general questions about WNV:** MDPH, Division of Epidemiology and Immunization at (617) 983-6800 or online at www.mass.gov/dph/wnv/wnv1.htm, or your local Board of Health (listed in the telephone directory under "government")
- **For questions about health effects of pesticides:** MDPH, Center for Environmental Health at (617) 624-5757

- **For general information about mosquito control:** visit the following webpage www.mass.gov/agr/mosquito/index.htm or contact the State Reclamation and Mosquito Control Board within the Massachusetts Department of Agricultural Resources at (617) 626-1777.
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